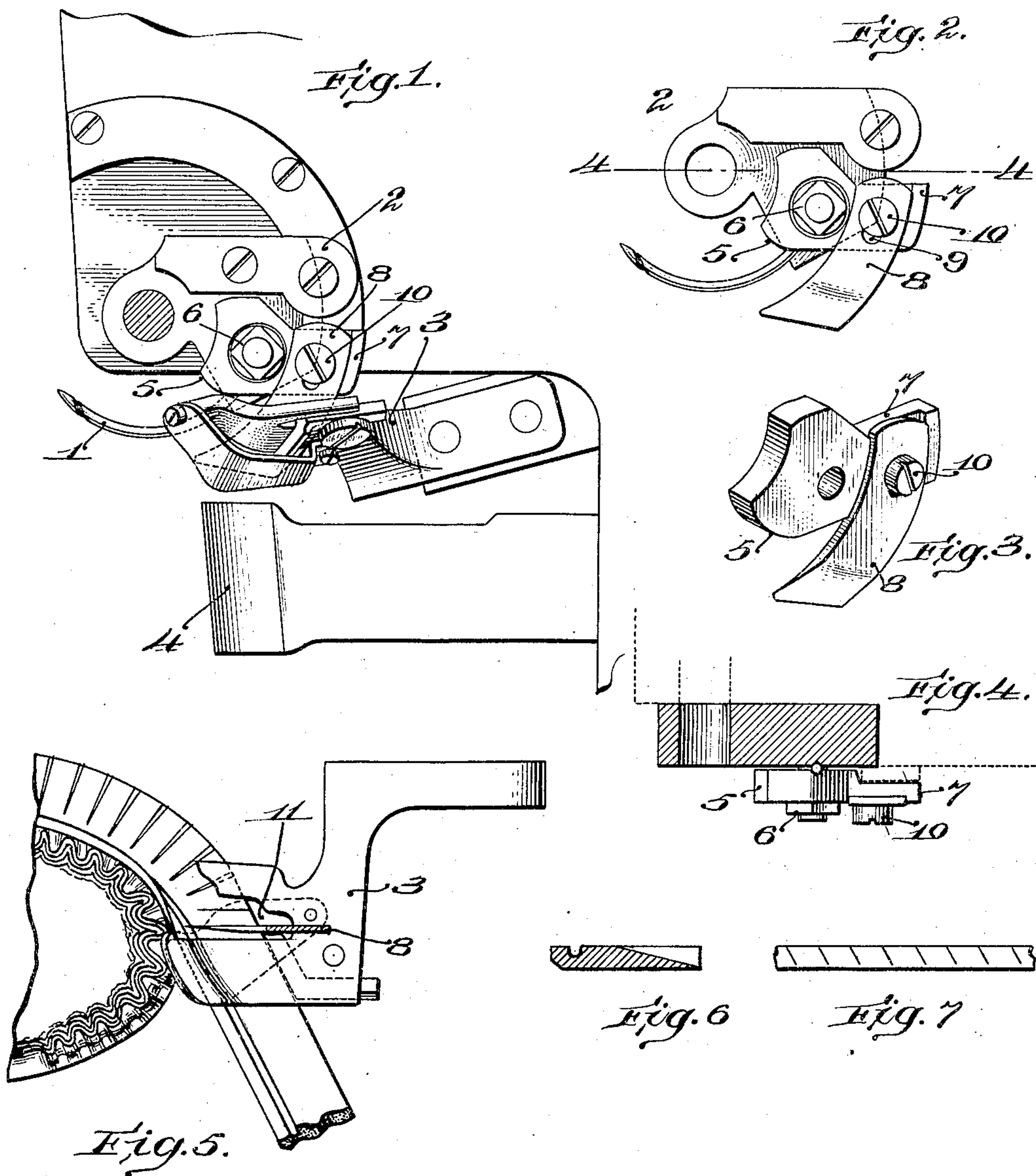


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J. T. McISAAC.
SHOE SEWING MACHINE.
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Witnesses:

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UNITED STATES PATENT OFFICE.

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SHOE-SEWING MACHINE.

No. 887,957.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN T. McISAAC, a citizen of the United States, residing at East Weymouth, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Shoe-Sewing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

In the manufacture of welted boots and shoes it is customary to beat out the welt after the welt has been secured to the upper and insole in order to cause it to lie flat in substantially the plane of the insole. To facilitate the beating-out operation the welt is usually provided with a series of cuts or slits in its under surface to enable the outer edge of the welt, especially at the toe portion of the shoe, to stretch sufficiently to bring it into a plane with the insole. Heretofore the slitting operation has been performed upon the welt strip before it is placed in the welt sewing machine or has been performed upon the welt after attachment to the shoe and just prior to or at the time of the beating-out operation. To slit the welt strip before it is placed in the welt sewing machine necessitates either a separate operation upon the welt strip or the addition of mechanism to the machine for grooving and beveling the welt, which renders this machine more complicated in construction and slower in operation. Furthermore, when the slitting operation is performed upon the welt strip the slits are often made of sufficient depth to appear upon the edge of the welt in the finished shoe and detract from its appearance. Also, when the slitted welt strip is sewed to the shoe the inner edge of the welt becomes more or less stretched, so that the advantages intended to be secured by slitting the strip are partially or wholly lost. When the slitting operation is performed upon the welt after the shoe leaves the welt sewing machine, a separate operation must be performed upon the welt either by hand or by a machine, or the welt beating machine must be complicated by the addition thereto of a suitable welt slitting mechanism. At this time the welt has hardened considerably, and when the slitting operation is performed by a machine more or less difficulty is experienced in bending the welt into a position to

be operated upon by the welt slitting mechanism.

The object of the present invention is to provide means whereby the slitting operation may be performed upon the welt at the same time that the welt is sewn to the shoe, so that a separate manipulation of the welt strip or of the shoe is rendered unnecessary, or the provision in the welt strip making machine or in the welt beating-out machine, of mechanism for slitting the welt.

With this object in view the present invention contemplates the provision in a welt sewing machine of a cutting mechanism acting automatically as the shoe is sewn to form a series of transverse cuts in the under surface of the welt.

Broadly considered, the present invention contemplates the provision of a cutting mechanism arranged in any suitable manner to permit the sewing operation and the welt slitting operation to be performed during one manipulation of the shoe. It is preferred, however, to arrange the cutting mechanism to act in advance of the needle, that is, on the side of the needle away from the shoe, so that the cuts are made in the welt before it is attached to the shoe. This arrangement of the cutting mechanism permits the use of a simple construction which does not add materially to the complexity of the mechanism of the machine and permits the shoe to be manipulated in precisely the same manner as in an ordinary welt sewing machine. This arrangement of the cutting mechanism also facilitates the sewing operation, as the welt is made flexible by the transverse cuts and can be more readily applied to the shoe.

The invention contemplates the provision of any suitable form of cutting mechanism. In the preferred form of the invention, however, the cutter is mounted to move towards and from the welt so as to form a complete cut at each actuation thereof. The cutter is preferably arranged to cooperate with the welt guide, and to act on the welt adjacent that edge of the welt guide which is next to the needle. This arrangement of the cutter causes the welt to be forcibly moved a slight distance through the welt guide at each actuation of the cutter, so that the feeding of the welt through the welt guide is facilitated and endwise stretching of the welt is avoided, the welt being secured to the shoe in such a manner that a comparatively few blows of

the welt-beating hammer of the beating-out machine are required to cause the welt to lie flat in the plane of the insole. This action of the welt slitting knife is considered of value, and a feature of the invention is considered to consist in the provision in a welt shoe sewing machine of a cutter arranged in any desired manner to form a series of transverse cuts in the under surface of the welt as the shoe is sewn, and to force the welt through the welt guide to wards the shoe.

In the simplest and most efficient form of the invention which has yet been devised, the cutter is mounted to move with the needle and to act on the welt while the needle is in the work, and to this end the cutter is secured to the cap by which the needle is secured to its actuating segment.

In addition to the features of invention above referred to, the present invention also consists in certain devices, combinations and arrangements of parts hereinafter described and claimed, the advantages of which will be obvious to those skilled in the art, from the following description.

The preferred form of the present invention is illustrated in the accompanying drawings, in which

Figure 1 is a view in side elevation of so much of a curved hooked needle shoe sewing machine as is necessary to show the connection of the present invention therewith; Fig. 2 is a detail view in side elevation of the needle segment and the parts mounted thereon; Fig. 3 is a detail perspective view illustrating the manner in which the welt slitting cutter is attached to the cap which secures the needle to the needle segment; Fig. 4 is a detail sectional view taken on the line 4-4 of Fig. 2; Fig. 5 is a detail plan view illustrating the manner in which the slitting knife coöperates with the welt guide to slit the welt; Fig. 6 is a cross-sectional view of the welt taken on a plane passing through one of the slits formed in the welt; and Fig. 7 is a detail view in side elevation of a portion of the welt.

Referring to the drawings, 1 indicates the curved hooked needle, 2 the needle segment, 3 the welt guide, and 4 the back gage of a welt shoe sewing machine of well-known construction. The needle 1 is secured to the segment 2 in the customary manner by means of a cap 5 and clamping screw 6. The cap 5 is, however, of somewhat different shape from the cap ordinarily used, being provided with a rearward extension 7 in which is formed a slot to receive the upper portion or shank of a welt slitting knife 8. The shank of the knife is provided with a slot 9 through which a clamping screw 10 passes, by means of which the knife can be adjusted to cut slits of the desired depth in the welt, and be firmly secured in adjusted position. Since the knife 8 is rigidly secured to the needle cap 5, it moves towards and from the welt with the needle

and acts upon the welt after the needle has penetrated the work. The knife acts upon the welt at the side of the welt guide next to the needle, and in order to permit the knife to engage the welt at this point the upper plate of the welt guide is provided with a notch 11 as indicated in Fig. 5. During the cutting stroke of the knife the welt is supported by the lower plate of the welt guide, which plate, as best indicated in Fig. 1, is arranged at an angle to the direction of movement of the slitting knife. The knife 6 forms a slit in the welt which is inclined to the surface of the welt as indicated in Fig. 7, this being the form of slit usually formed in a welt whenever the welt is slitted to facilitate the beating-out operation. The advantages of this form of slit are well understood by those skilled in the art, and will be obvious without further description. As the knife engages the welt it tends to force the welt forward through the welt guide, and this tendency is increased by the fact that the bevel on the welt slitting knife is formed on the surface of the knife away from the needle, as is clearly shown in Figs. 3 and 5.

In the operation of the machine the stitch forming devices and the other moving parts operate in the usual manner, the operation of the machine being precisely the same as that of well-known shoe sewing machines with the exception that at each forward movement of the needle a slit of substantially the form illustrated in Figs. 6 and 7 is formed in the welt at the side of the needle away from the shoe.

The nature and scope of the present invention having been indicated and the preferred form of the invention having been specifically described, what is claimed is:—

1. A welt shoe sewing machine, having, in combination with the stitch-forming devices, cutting mechanism acting in advance of the needle to form a series of transverse cuts in the under surface of the welt.

2. A welt shoe sewing machine, having, in combination with the stitch-forming devices, cutting mechanism acting automatically as the shoe is sewn to form a series of transverse cuts in the under surface of the welt.

3. A welt shoe sewing machine, having, in combination with the welt guide and stitch-forming devices, a cutter coöperating with the welt guide to form a series of transverse cuts in the under surface of the welt.

4. A welt shoe sewing machine, having, in combination, stitch-forming devices, a cutter, and means for moving the cutter towards and from the welt as the shoe is sewn to form a series of transverse cuts in the under surface of the welt.

5. A welt shoe sewing machine, having, in combination, stitch-forming devices, a welt guide, a cutter, and means for moving the cutter towards and from the welt guide to

form a series of transverse cuts in the under surface of the welt.

5 6. A welt shoe sewing machine, having, in combination, stitch-forming devices including a needle, and a cutter mounted to move with the needle and arranged to form a transverse cut in the under surface of the welt at each actuation of the needle.

10 7. A welt shoe sewing machine, having, in combination, stitch-forming devices including a curved hooked needle, a welt guide, and a cutter mounted to move with the needle and arranged to cooperate with the welt guide to form a transverse cut in the under
15 surface of the welt at each actuation of the needle.

20 8. A welt shoe sewing machine, having, in combination, stitch-forming devices including a curved hooked needle; a needle segment, a cap to secure the needle to the needle segment, and a cutter secured to the cap arranged to form a transverse cut in the under surface of the welt at each actuation of the needle.

25 9. A welt shoe sewing machine, having, in

combination, stitch-forming devices including a needle, and a cutter acting on the welt while the needle is in the work to form a transverse cut in the under surface of the welt.

30 10. A welt shoe sewing machine, having, in combination, stitch-forming devices, a welt guide, and a cutter acting on the welt adjacent that edge of the welt guide which is next to the needle to form a series of transverse
35 cuts in the under surface of the welt.

11. A welt shoe sewing machine, having, in combination, stitch-forming devices, a welt guide, and a cutter acting as the shoe is
40 sewn to form a series of transverse cuts in the under surface of the welt and to force the welt through the welt guide towards the shoe.

In testimony whereof I affix my signature, in presence of two witnesses.

JOHN T. McISAAC.

Witnesses:

FRED O. FISH,
ANNIE G. HOLT.